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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/332,212	06/14/1999	JOSEPHUS J.M. BRAAT	PHN-16.982	2640

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EXAMINER
SMITH, ZANDRA V

ART UNIT	PAPER NUMBER
2877	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/332,212	Applicant(s) BRAAT, JOSEPHUS J.M.	
	Examiner Zandra V. Smith	Art Unit 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 12-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☒ Claim(s) *12-18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-3 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear how "t(n-m)" relates to the given equation in claims 2 and 3 since "n" and "m" are not used in the equations. Additionally, claim 8 includes "t_e", it is unclear how "t_e" relates to the claimed equation since "t_e" is not presented in the equation.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 6, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by ***Nakamura et al. (4,952,787)***.

As to **claim 1, 6 and 9,** Nakamura discloses a system for detecting focus error using pits and light beams having astigmatism, comprising:

a scanning device including a radiation source (20, col. 7, line 38);

an objective system (25) and a detection system (col. 12, lines 65-68), characterized in that the detection system includes a plurality of detectors and in that the device comprises an electronic circuit for forming a time difference between corresponding parts of the detector signal relating to passage of the radiation beams over one the marks and for generating a time difference signal representing a wavefront aberration, specifically focus error (col. 12, line 65- col. 13, line 40).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Nakamura et al. (4,959,787)*** in view of ***Hoshi et al. (4,733,065)***.

As to **claims 2-3,** Nakamura discloses everything claimed, as applied above, in addition for sub-detectors are provided (col. 12, lines 65-69). Nakamura differs in that the difference between the sum signals are used to determine the wavefront aberration, however the use of four or more sub-detectors to determine wavefront aberration using the sum and difference between the different signals and is well known as taught by Hoshi. Hoshi discloses an optical head device that includes the use of intensity signals from four or more sub-detectors to determine wavefront aberration (col. 10, line 65- col. 11, line 42 and col. 15, line 1- col. 16, line 60). It would have been obvious to one having ordinary skill in the art at the time of invention to use the intensity of the detector elements in any combination to determine wavefront aberrations since

the intensity across the detector elements will change in response to aberrations in the wavefront reaching the detectors.

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Nakamura et al. (4,959,787)*** and in view ***Hoshi et al. (4,733,065)*** of and further in view of ***Kuramochi et al. (5,008,552).***

As to **claims 4-5,** Nakamura and Hoshi disclose everything claimed, as applied above, with the exception of details of the detector and wobbling, however to do so is well known as taught by Kuramochi. Kuramochi discloses a data recording and reproducing apparatus that includes a divided detector (col. 17, line 49) and wobbling of the detector (col. 17, lines 38-50). It would have been obvious to one having ordinary skill in the art at the time of invention to include a divided detector and wobbling in a direction perpendicular to the scan line to allow for detection of multiple wavefront aberrations. Also, wobbling in a direction perpendicular to the scan line would allow for detection of the wobbling since wobbling in a direction parallel to the scan line would blend into movement of the object.

Claims 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Nakamura et al. (4,959,787)*** in view of ***Satoh et al. (5,617,389)***.

As to **claims 7 and 10,** Nakamura discloses a system for detecting focus error using pits and light beams having astigmatism, comprising:

a scanning device including a radiation source (20, col. 7, line 38);

an objective system (25) and a detection system (col. 12, lines 65-68), characterized in that the detection system includes a plurality of detectors and in that the device comprises an electronic circuit for forming a time difference between corresponding parts of the detector

signal relating to passage of the radiation beams over one the marks and for generating a time difference signal representing a wavefront aberration, specifically focus error (col. 12, line 50- col. 13, line 40). Nakamura differs from the claimed invention in that a divided detector consisting of four quadrants and eight cells is not provided, however to do so is well known as taught by Satoh. Satoh discloses a system for reproducing information of an optical disk that includes a divided detector consisting of 4 quadrants and eight cells (fig. 2, col. 6, lines 37-40 and 55-60). It would have been obvious to one having ordinary skill in the art at the time of invention to include a divided detector consisting of 4 quadrants and eight cells to improve recording density of the optical disk by more accurately detecting reflected light resulting from changes in spacing between the recording surface and the optical head.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over ***Nakamura et al. (4,959,787)*** and ***Satoh et al. (5,617,389)*** and further in view of ***Hoshi et al. (4,733,065).***

As to **claim 8,** Nakamura and Satoh disclose everything claimed, as applied above, with the exception of the detector details, however the use of four or more sub-detectors to determine wavefront aberration is well known as taught by Hoshi. Hoshi discloses an optical head device that includes the use of intensity signals from four or more sub-detectors to determine wavefront aberration (col. 10, line 65- col. 11, line 42 and col. 15, line 1- col. 16, line 60). Additionally, Hoshi provides determining wavefront aberration using the sum and difference between the different signals from the detectors. It would have been obvious to one having ordinary skill in the art at the time of invention to use the intensity of the detector elements in any combination to determine wavefront aberrations since the intensity across the detector elements will change in response to aberrations in the wavefront reaching the detectors.

Allowable Subject Matter

Claims 12-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record, taken alone or in combination, fails to disclose or render obvious structural details of the detector or determining the focus signal based on .

Response to Arguments

Applicant's arguments filed February 25, 2003 have been fully considered but they are not persuasive. In regards to applicant's arguments concerning claims 2-3 and 8, please see above where is it pointed out that the confusion in the claims comes from the use of "t(n-m)" when the variables "n" and "m" are not used in the equation the use of "t_e" when "t_e" is not used in the equation.

As to the plurality of detector elements, please see above, where it is clearly pointed out that a plurality of detector elements are provided. Please note that a different embodiment has been used.

As to focus error and wavefront aberration, Nakamura discloses that focus error in an aberration in the wavefront (col. 8, line 5-col. 10, line 60).

As to the combination of using Satoh, since the rejection has been changed to use the embodiment of figure 5 that includes a four quadrant detection system with electronic circuitry and since Satoh is used to determine focus error (col. 6, lines 55-60), the arguments are respectfully traversed.

Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zandra V. Smith whose telephone number is (703) 305-7776. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (703)308-4881. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0530.

Zandra V. Smith
Primary Examiner
Art Unit 2877

May 1, 2003